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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 58

Application Number: 09/057,406
Filing Date: April 08, 1998
Appellant(s): WERENICZ ET AL.

Allison Johnson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 13, 2002.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: The rejection of claim 55 under the judicially created obvious double patenting doctrine has been withdrawn and therefore whether the identified rejection is an issue is now moot.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 2-12, 33-36, 38-42, 44, 46-56 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). Namely, appellant has identified two groupings of claims which appellant states each stand or fall on their own merits. Claims 2-12, 33-36, 38-42, 44, 46-54 and 56 were identified as Group I while claim 55 was identified as Group II.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

(A) Listing of Prior Art of Record

315,013	Claassen (Europe)	5-1989
4,939,202	Maletsky et al	7-1990
3,402,086	Smith et al	9-1968
4,147,580	Buell	4-1979
5,510,138	Sanftleben et al	4-1996
5,409,733	Boger et al	4-1995
3,904,806	Waggoner	9-1975
688,637	Du Pont (United Kingdom)	3-1953

(B) Brief Description of Prior Art of Record

E.P. '013 to Claassen suggested that it was known at the time the invention was made to apply a continuous film upon a nonwoven web with a nozzle wherein the coating applied was a hot melt coating based upon amorphous thermoplastic material. The coating material was melted and dispensed through the nozzle upon the nonwoven substrate in the manufacture of a disposable absorbent article.

Maletsky et al suggested it was known at the time the invention was made to employ a hot melt composition that included amorphous thermoplastic (Vestoplast) which appears to have the same viscosity properties as defined in the claims. Additionally, the hot melt coating was applied with an extrusion applicator wherein the films applied were thin films (had thicknesses on the order of .65-1.5 mils in thickness) which were attached to nonwovens in the manufacture of disposable diapers and which were pinhole free.

Smith et al taught that it was known to apply thin films of hot melt coatings by a conventional hot melt extrusion process where a film of hot melt was extruded from a slit die and after exiting the die, the film was brought into contact with the substrate to be coated (i.e. there was a gap between the slit die and the substrate).

Buell suggested in the art of manufacturing a disposable absorbent article that contact between the nozzle and a nonwoven substrate being coated with the hot melt material would have resulted in a break-up of the film and a discontinuous coating of the hot melt applied to the nonwoven substrate.

Waggoner as well as **U.K. 688,637** taught that it was known at the time the invention was made to provide a gap between the extrusion slit die and the substrate to be coated which gap was optimized to attain a bonding of the extruded film to the substrate.

Sanftleben et al suggested in the art of conformal coatings that it was known to utilize a hot melt material for such coatings wherein the coating composition had a viscosity suitable for the coating operation. The reference suggested that the coatings applied would have been thin and would have been hole free. The coatings included hot melts based upon amorphous thermoplastics and in the examples the coatings were stated to have been applied with a

handheld dispenser and no stringing resulted as well as the use of brush application of the conformal coating.

Boger et al suggested that it was known to apply a conformal coating upon a substrate with a slit die wherein the coating (which included a hot melt) was formed into a film at the exit of the slit die and brought down onto the substrate (there was a gap between the applicator and the substrate).

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 2-12, 33-36, 38-42, 44, 46-56 are rejected under 35 U.S.C. 103(a) as being unpatentable over E.P. 315,013 in view of Maletsky et al '202 further taken with Smith et al and optionally further in view of Buell.

The reference to E.P. '013 suggested that it was known at the time the invention was made to coat a nonwoven substrate with a thin film (page 4, lines 1-4 of the translation, a coating weight of 15-30 g/m^2 is a thin layer) of hot melt adhesive (which included the use of amorphous thermoplastics therein abstract of the disclosure, page 3, lines 10-11 of the translation) in order to provide a barrier film for a disposable diaper. The film was stated as having been extruded from a "surface nozzle" (page 5, lines 10-13 of the translation). The reference did not expressly state that the nozzle was not in contact with the nonwoven web, however the coating was clearly applied to a nonwoven web. The reference did suggest, however that thicknesses on the order of several microns in thickness were desired by describing the coating weight as being between 15-30 g/m^2. the reference made it clear that those skilled in the art at the time the invention was made knew is was desirable to provide a thin coating upon a

nonwoven wherein the coating was continuous and pinhole free. Note that the coating was a liquid barrier film but that it allowed for passage a vapor there through. If holes in the film had been acceptable, then the film would not have sufficed as a liquid barrier (at page 9, lines 11-14 of the translation, the reference to E.P. '013 expressed the desirability of a continuous film for use as the moisture barrier). The reference failed to make mention of the specific complex viscosity of the coating composition in the coating operation (i.e. the reference did not suggest that the hot melt based upon the amorphous thermoplastic composition had the requisite complex viscosity of the claims). The applicant is more specifically referred to the translation of the reference at page 3, lines 7-11, page 4, lines 1-4, page 5, lines 10-13, page 8, lines 9-13, Figure 2. the reference failed to make mention of the complex viscosity of the hot melt coated (although the reference suggested the use of hot melts including EVA and ATP) and additionally failed to make mention of the spacing employed between the nozzle and the surface (note that the reference descried a continuous thin pinhole free coating upon a nonwoven and one would have expected that such would have been applied without contact with the nonwoven as the fibers of the same would tend to break the film apart upon application).

Those skilled in the art of making a diaper would have readily appreciated that hot melt adhesive compositions which had the window of complex viscosity as defined by the claim would have been employed by E.P. '013 in light of the reference to Maletsky et al '202. More specifically, reference to Maletsky et al '202 describes hot melt adhesive compositions which would have been useful an operation for providing a coating to a nonwoven in the manufacture of a disposable diaper. More specifically, Maletsky et al '202 suggested that thin pinhole free films would have been extrusion coated (coated from an extruder) upon nonwovens wherein the

adhesive composition included compositions which were the same as appellant's disclosed compositions (amorphous polyolefin, VESTOPLAST, SBS, EVA, note that the reference to E.P. '013 suggested the use of amorphous thermoplastic and that such was likewise suggested by Maletsky and that the appellant's themselves chose to use amorphous thermoplastic hot melts as well as VESTOPLAST, see page 8, line 32-page 9, line 5 and page 10, lines 11-23 of the disclosure, for example). The same compositions described by Maletsky et al '202 must have the same properties of complex viscosity due to the intrinsic nature of the material. the reference to Maletsky '202 suggested that one skilled in the art would have applied thin coatings of 0.65-1.5 mils in thickness upon the nonwoven. Additionally, the reference suggested that those skilled in the art would have applied the coating at temperatures between 300-500 degrees F (which is 149-260 degrees C) and that the viscosity of the polymer would have lied between 40-1500 poise in the operation, see column 5, lines 52-column 6, line 6. The reference made it clear that those skilled in the art at the time the invention was made would have employed hot melt adhesives in a diaper construction which met the complex viscosity requirements of appellant's claimed invention (note that use of the same hot melt composition would have necessarily had the same complex viscosity). The reference failed to make mention of the use of a gap between the nozzle and the nonwoven surface being coated in E.P. '013.

However, providing a thin film onto a substrate by coating a hot melt composition from an extrusion die typically included the spacing of the die tip from the substrate (so that an adhesive film spanned the region between the die tip and the substrate) as evidenced by Smith et al. More specifically, Smith et al suggested that coating of substrates with olefin polymers was frequently performed via a hot melt extrusion process which involved melting the polymer,

extruding the polymer through a slit die to form a molten film of the polymer and depositing the molten film onto the substrate (i.e. there was a spanning of the molten polymer film between the die exit and the substrate), see column 1, lines 26-34. the reference to Smith et al suggested that thin coatings of .25-10 mils were possible using this technique. Clearly, the reference to Smith et al suggested that those skilled in the art at the time the invention was made would have readily appreciated that the thin film applied to the nonwoven in E.P. '013 which was applied from a surface nozzle of an extruder, would have included the extrusion of the thin film from the slit nozzle and the application of the film upon the nonwoven substrate (where the film spanned the gap between the exit of the slit nozzle and the substrate) as such was well recognized as the conventional manner for applying thin films of hot melt materials upon substrates at high rates of speed as evidenced was known by Smith et al. it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the conventional hot melt coating techniques of Smith et al as such were known for application of thin films upon substrates including fabrics and papers in the processing of E.P. '013 where an extrusion device was used to apply a thin film coating of a hot melt upon a nonwoven wherein the compositions employed for application onto the substrate would have included hot melts of ATP and EVA (as suggested by E.P. '013) as well as the specific hot melts described by Maletsky (to provide thin barrier films Maletsky suggested that ATP was useful).

Regarding the specific dependent claims, the applicant is advised that one skilled in the art would have determined the specified gap via routine experimentation which was a result effective variable which was dependent upon the degree of adhesion one wished to attain. Note that the reference to Maletsky suggested additional traditional polymers useful including block

copolymers and EVA (which was suggested by E.P. '013). The particular selection of the specific hot melt selected would have been dependent upon the desired characteristics one wished to attain in the finished end product. Additionally, note that the applicant has previously established that there was a relationship between the coat weight and the thickness of the coating and at coat weights of 15-30 g/m^2 the reference to E.P. '013 suggested that one would have attained the specified thickness for the coatings. Additionally, the reference to Smith suggested the specified thicknesses for the coatings (on the order of 10 microns in thickness). Note that a slit die typically included a shim therein and such is taken as conventional to the art of extrusion.

While it is believed that the reference to Smith et al suggested that hot melt extrusion such as that performed by E.P. '013 would have necessarily included a spacing between the exit of the slit die, the reference to Buell is cited as further evidence of the same. In Buell, the extrusion of hot melt was applied to a nonwoven wherein the die made contact with the nonwoven web being coated (the exit for the slit is in direct contact with the nonwoven). During such processing, the fibers of the nonwoven break up the adhesive being dispended from the extruder tip and form globules on the surface of the nonwoven web of hot melt adhesive. The applicant is more specifically referred to Figure 2 and column 4, lines 36-47. the reference was unable to achieve a thin film which was a continuous hole free film in such processing but rather the film of hot melt was broken up as the nonwoven was dragged over the die tip. Clearly, one viewing the same would have understood that in order to process according to E.P. '013 to attain a continuous film which was lacking in holes therein the extruder must have been spaced from the surface of the nonwoven substrate (because if it were in contact with the substrate then the adhesive would have been provided in a discontinuous form as evidenced by Buell). It would

have been obvious to one of ordinary skill in the art at the time the invention was made that one skilled in the art would have understood that the extruder of E.P. '013 would have been spaced from the nonwoven surface being coated in order to provide a continuous coating upon the same as evidenced by Buell wherein such processing would have included conventional melt extrusion processing as suggested by Smith et al wherein the hot melt adhesive employed in the operation included those of Maletsky et al for the reasons previously specified.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over E.P. 315,013 in view of Maletsky et al '202 further taken with Smith et al and optionally further in view of Buell as set forth above further taken with Waggoner or U.K. 688,637.

While the references as set forth above suggested that a gap would have existed between the exit of the extruder and the substrate being coated wherein a film would have spanned this gap, they failed to specify the specific amount of the gap. However, as evidenced by either one of U.K. '637 or Waggoner (Waggoner for example at column 2, lines 44-50 and U.K. 688,637 at page 2, lines 40-58) suggested that those skilled in the art of extrusion coating would have adjusted the gap in order to ensure adequate bonding wherein the spacing of the gap was set to be small in order to ensure that the film was hot enough to attain good adhesion with the web being coated. It would have been obvious to one of ordinary skill in the art at the time the invention was made to adjust the gap to attain an adequate adhesion of the film exiting the extruder to the substrate as suggested by either one of U.K. 688,637 or Waggoner in the process of extrusion coating a substrate with a hot melt adhesive as set forth above by the combination of E.P. 315,013, Maletsky et al '202 and Smith et al and optionally further in view of Buell..

Claims 3-6, 8, 10-12, 33, 35, 36, 39-42, 44, and 46-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanftleben et al in view of Boger et al.

Sanftleben suggested a process of conformal coating a substrate in order to encapsulate electrical components which are present on the substrate. The reference suggested that the conformal coating composition would have included the use of hot melt adhesive compositions including amorphous thermoplastics (column 8, lines 63-column 9, line 3. The reference suggested that those skilled in the art would have understood that the conformal coating would have been typically applied at a thickness of 50 microns to 130 microns (column 5, line 67-column 6, line 4). It should be noted that it has previously been established that the thickness of the coating is directly related to the coating weight applied (low thickness relates directly to low weights). The reference additionally suggested that those skilled in the art would have applied the coating from a nozzle opening (the opening nozzle of a hand held hot melt adhesive applicator, see column 10, lines 15-33, for example where the handheld applicator applied the hot melt upon the substrate). The reference also suggested that the adhesive composition would have a viscosity as low as 1000 cps (10 poise) at processing temperatures but that viscosities as high as 10,000 cps (100 poise) would have been suitable for the operation, column 6, line 38-50. Additionally the reference suggested that an alternative coating technique would have included spray application of the hot melt composition. It should also be noted that the melt temperature of the adhesive compositions were set forth in the examples and included compositions which melted at temperatures of 115 degrees C (where the melting range defined by the reference is 40-250 degrees C). The applicant is more specifically referred to column 4, lines 21-30 for the processing temperatures. At column 4, lines 55-60, the reference suggested that extrusion coating

would have been a useful technique for applying the conformal coating. Column 5, line 67-column 6, line 4 described the thickness of the film being applied. Column 6, lines 41-48 described the viscosity of the hot melt thermoplastic coating and at column 8, line 63-column 9, line 65 the reference described the hot melt adhesive composition in further detail. Applicant is additionally referred to column 10, lines 15-33 for the coating with the hot melt glue gun (note that the reference also suggested that brush coating was an alternative technique) and column 10, lines 34-56 for the spray coating of the adhesive. The reference failed to expressly state that the use of the glue gun and/or extrusion coating would have entailed the use of a gap between the exit of the nozzle and the substrate when applying the conformal coating.

The reference to Boger et al, who is applying a conformal coating in the form of an adhesive, suggested that there were five known techniques for applying the adhesive conformal coating upon the substrate. These five techniques included brush coating, spraying as well as extrusion coating. The applicant is more specifically referred to column 1, line 66-column 2, line 17. The extrusion coating operation is described as a slit die method in which the adhesive is extruded through a slit die and ejected as a film for coating a printed circuit board surface. One reading the same would have understood that there would have been a gap between the board and the nozzle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the extrusion techniques of Boger et al to apply the conformal coatings upon a substrate as such as clearly the type of extrusion technique performed by Sanftleben et al in the process of applying the conformal coating therein. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 213USPQ 532. With respect to the specific complex viscosity

recited by applicant in the processing, it is believed that the hot melt coating based upon the amorphous polyolefin of Sanftleben would have had this property because it is the same material (amorphous polyolefin in a hot melt composition) as employed by appellant (and thus would have intrinsically had the same properties as defined in the claims). Where, as here, there is a sound basis to believe that the critical function for establishing novelty and unobviousness in the claimed subject matter may, in fact, be an inherent characteristic of the prior art composition (note that the references do not measure the complex viscosity under the specified shear of 1 radian/ second and 1000 radian/second at the processing temperature, however the viscosities measured appear to have viscosity measures within the ranges of appellant's viscosity and the coatings applied are thin pinhole free coatings of the hot melt, which is what appellant achieved with the specified coatings), it is incumbent upon appellant to prove that the prior art compositions do not possess the characteristics relied upon, see In re Spada, 15 USPQ2d 1655, In re Fitzgerald, 205 USPQ 594, In re Best, 195 USPQ 430, In re Glass, 176 USDPQ 529, In re Ludtke ,169 USPQ 563 and In re Swinehart ,169 USPQ 226.

With regard to the specific spacing between the nozzle and the substrate, note that Boger suggested such processing was known and it certainly would have been within the purview of the ordinary artisan to optimize the gap in order to allow the film to cool to some degree prior to contacting but not to such an extent that no bonding would have been attained (note that a gap of 0.5 mm is an extremely small gap between the nozzle outlet and the substrate).

(11) Response to Argument

On page 8 of the appeal brief, the appellant first addresses the prior art rejection of E.P. '013, Maletsky et al, Smith et al, and optionally Buell. The appellant argues that the Office posit

taken is that the reference to E.P. '013 inherently teaches the non-contact coating (appellant surmises that because the Office relied upon Buell to show that contact coating would have resulted in a broken up film, and because the film of E.P. '013 was desired to be continuous and pinhole free, then the processing in E.P. '013 must be non-contact coated) and that inherency is not an appropriate basis for rejection on obviousness and that inherency is not a substitute for some teaching or suggestion necessary to support an obviousness rejection. The appellant is advised in this regard that this line of reasoning completely ignores the teachings of Smith et al which clearly expressed that hot melt extrusion was known to have been a non-contact coating operation. Appellant is advised that one cannot show non-obviousness by attacking references individually where combinations of references have been applied against the claimed invention. The appellant is additionally advised that the reference to E.P. '013 clearly suggested that those skilled in the art at the time the invention was made would have incorporated a "surface nozzle" to apply the coating of hot melt thermoplastic upon the non-woven. Clearly, the reference to E.P. '013 suggested a coating device for application of the thermoplastic material upon the non-woven. One skilled in the art would have understood that the coating device employed in E.P. '013 (the surface nozzle) would have included a means to apply the film in the form of a melt upon the nonwoven as the ordinary artisan is presumed to know more than what he reads in the references, he is presumed to have sufficient basic knowledge to apply and combine features of the prior art, In re Sovish, 226 USPQ 771, In re Bode, 191 USPQ 12, In re Bozek, 163 USPQ 545. A determination of obviousness may be based upon common knowledge and common sense of the person of ordinary skill in the art, In re Bozek, 163 USPQ 545. Here, a hot melt would

have been understood to have been applied in a molten condition with a nozzle application device.

The appellant argues that the reference to E.P. '013 did not suggest dispensing a continuous film from a coating device (which as addressed above, the reference clearly did suggest a coating device for application of the hot melt material upon the non-woven wherein the hot melt was applied in the form of a continuous thin film) or the suspending of the film from the coating device to the substrate. The reference to Smith expressly stated:

> "The **coating of substrates with olefin polymers and copolymers** has **long been known** to be desirable and is practiced on a large scale. Frequently, the **coating is performed by the so-called hot-melt extrusion process**. This type of processing involves **melting the olefin polymer, extruding the molten polymer through a slit-die to form a molten film of the polymer and depositing the molten film onto the substrate** it is desired to coat." (column 1, lines 26-34, emphasis added)

Clearly expressing that those skilled in the art would have had the knowledge and understanding that the coating of substrates with hot melt materials would have been practiced with a slit-die (a nozzle like that suggested by E.P. '013) which extruded a film of molten polymer and then applied the polymer upon a substrate. While it is agreed that E.P. '013 did not expressly state that the coating operation was one of non-contact coating, one viewing the prior art as a whole would have appreciated that the suspension of the molten film of polymer would have been performed when practicing the invention with the surface nozzle of E.P. '013 as evidenced by Smith et al.

The appellant argues next that Maletsky et al does not cure the deficiencies of E.P. '013 because in order to be able to properly combine the references there must be some teaching or suggestion in the prior art to make the combination and there must be some reasonable expectation of success when making the combination. Here, however, there not only appears to have been ample motivation to make the combination but there also appears to be a reasonable

expectation of success. The appellant is advised that one skilled in the art at the time the invention was made would have looked to Maletsky as useful hot melt coating materials for providing a barrier in a disposable diaper and such materials were suggested by E.P. '013. note that both Maletsky et al and E.P. '013 were concerned with formulation of hot melt coatings which would have been useful as barrier layers for disposable diapers wherein the coatings applied would have been continuous thin films and wherein amorphous thermoplastics were utilized in the coatings. Clearly, one would have not only been expected to utilize the materials of Maletsky et al in the processing of E.P. '013 but one also would have reasonably expected that the compositions of Maletsky et al would have provided the desired end results of thin films which were effective moisture barriers for the disposable diapers. Note that the compositions of Maletsky et al appear to be the same thermoplastic compositions employed by appellant and that one would have expected that the composition would have intrinsically possessed the same properties as recited in relation to the viscosity of the material. the appellant is advised additionally that the reference to Maletsky et al did not expressly measure the viscosity under the specified shear conditions, however, because it is the same material one would have expected that the composition would have had the same property. Additionally, the resulting effects of using the composition are the same as that achieved by appellant, namely a thin pinhole free film coating of the substrate. Where, as here, there is a sound basis to believe that the critical function for establishing novelty and unobviousness in the claimed subject matter may, in fact, be an inherent characteristic of the prior art composition (note that the references do not measure the complex viscosity under the specified shear of 1 radian/ second and 1000 radian/second at the processing temperature, however the viscosities measured appear to have viscosity measures

within the ranges of appellant's viscosity and the coatings applied are thin pinhole free coatings of the hot melt, which is what appellant achieved with the specified coatings), it is incumbent upon appellant to prove that the prior art compositions do not possess the characteristics relied upon, see In re Spada, 15 USPQ2d 1655, In re Fitzgerald, 205 USPQ 594, In re Best, 195 USPQ 430, In re Glass, 176 USDPQ 529, In re Ludtke ,169 USPQ 563 and In re Swinehart ,169 USPQ 226.

The appellant argues that Smith does not cure the deficiencies of the prior art rejection because Smith does not teach or suggest the dispensing of the specified composition from the extrusion die. It is readily admitted that Smith did not express the specific composition for use as a barrier coating in a disposable diaper. However, in the background of Smith et al, as discussed above, there is clear evidence that those skilled in the art at the time the invention was made would have known what was meant by the "surface nozzle" in E.P. '013. it should additionally pointed out that the reference to Maletsky et al suggested that one skilled in the art at the time the invention was made would have utilized an "extrusion applicator" (column 6, lines 44-45). One skilled in the art , viewing the prior art "as a whole", would have understood that the coating applied in E.P. '013 with the nozzle application would have been with an extrusion coating device and that such a "hot melt extrusion process" would have entailed the extrusion of the polymer from a slit die in the form a film and the contacting of the film onto the substrate as suggested by Smith et al. Smith et al expressed what basic knowledge one skilled in the art would have had relating to hot melt extrusion coatings and how such would have been applied from extrusion dispensing nozzles. Clearly, one skilled in the art would have known how to dispense the material of Maletsky et al to achieve the barrier properties desired as suggested by

E.P. '013 wherein such included a contactless coating , conventional hot melt extrusion operation as suggested by Smith et al. while it is true that Smith does not express that the coating compositions of Maletsky et al will perform adequately using the conventional, hot melt extrusion process for application, one need not show absolute predictability but rather the burden is one of reasonable expectation of success, In re O'Farrell, 7 USPQ2d 1673. as the compositions of E.P. '013 and Maletsky were olefin polymers and/or copolymers (amorphous thermoplastics) which were applied upon the substrate with a nozzle (E.P. '013) with an extrusion apparatus (Maletsky et al), one skilled in the art would have reasonably expected that processing using the conventional hot melt extrusion processing which was commonplace in the art as expressed by Smith would have worked in the operation of providing the thin film to the substrate. The appellant is additionally advised that the reference to Smith et al expressed that thin films would have been applied using the processing described therein, see column 3, lines 36-43.

The appellant argues that Buell adds nothing cure the deficiencies of the prior art rejection. The appellant argues in this regard that the reference to Buell does not teach that all contact coating methods would have inherently resulted in a discontinuous coating. While this is a correct statement, the reference did suggest when viewed as a whole that those coating a nonwoven web with a hot melt material through a slit die that contact coating the nonwoven would have resulted in a discontinuous coating as a result of the fibers of the nonwoven breaking up the coating composition upon application. Because E.P. '013 and Maletsky both desired continuous pinhole free coatings, one viewing the negative teaching of Buell for coating the nonwoven with the discontinuous film would have been led to believe that the "surface nozzle" of E.P. '013 and the "extrusion applicator" of Maletsky were applying the film in a non-contact

coating manner (because coating where the nonwoven contacted the nozzle would have resulted in a discontinuous coating as suggested by Buell). It only seems logical that the coating techniques employed to apply the continuous film upon the nonwoven substrate would have been applied using the conventional and known hot melt extrusion processing of Smith et al wherein the nozzle did not directly contact the nonwoven as such direct contacting (at least in some instances) would have resulted in the break up of the continuous film as evidenced by Buell.

With regard to the rejection of claim 55, the appellant essentially makes the following two arguments for the patentability of the claim: (1) the prior art of record failed tot each that the suspended film of hot melt adhesive "builds in viscosity and cohesive strength such that any fibers of the substrate do not penetrate the continuous film" , and; (2) the prior art failed to teach the suspending of a "hot melt adhesive composition" having the specified properties. These arguments are respectfully traversed. Beginning with the second argument relating to the lack of a teaching of the use of a hot melt adhesive composition of the type claimed (having the specified viscosity properties), the appellant argues that E.P. '013 did not teach a hot melt composition. The appellant is expressly referred to page 5 of the translation where the E.P. '013 reference stated:

> "To this end, the non-woven coated with the preferred thermoplastic high polymer material, namely a **hot melt on the basis of polyethylene EVA or ATP**, bypasses a heating roller, so that warmed and thus molten **hot melt** is bonded to the non-woven." (emphasis added)

clearly, the material of E.P. '013 was a hot melt composition based upon ATP for example (amorphous thermoplastic). The reference to Maletsky et al clearly envisioned the use of a thermoplastic composition based upon amorphous thermoplastics which were applied as thin coatings for barrier layers of disposable absorbent articles upon nonwovens. Certainly, then, the

prior art envisioned the use of hot melt thermoplastic adhesive coatings upon a nonwoven substrate. The appellant then strenuously argues that no reference taught that the composition built in viscosity and cohesive strength such that any fibers of the substrate do not penetrate the continuous film.

It is agreed that no reference suggested that the hot melt material dispensed from the nozzle and suspended from the same built in viscosity and cohesive strength such that any fibers of the substrate do not penetrate the continuous film. However, in both Maletsky and E.P. '013 the nonwovens were coated to provide continuous barrier films upon the same (which were moisture barriers, for example). The combination, as expressed above clearly suggested that one utilize the same hot melt thermoplastic adhesive employed by appellant. One would have expected that the same compositions would have acted in a similar manner to achieve the same goals (or at least to attain a pinhole free film as desired by both Maletsky and E.P. '013). Merely because appellant has chosen to use terminology and measure variables unmeasured in the prior art does not entitle appellant to a patent for that which already existed in the public domain. The appellant is advised that it is appellant that have the burden of showing that the properties defined in the claim are not present in the prior art references once the burden of a prima facie case has been established. This is because the Office is ill equipped to test the materials presented before it and also to test the prior art materials and make comparisons of the same. the burden has been shifted upon appellant to evidence the same in that the reference to Maletsky et al appears to teach useful amorphous thermoplastic compositions which are adhesive and which are hot melts which would have been useful in the process of E.P. '013 and which are (or at least appear to be) the same materials employed by appellant (VESTOPLAST, for example). The

Office is not equipped to test whether extruding this composition in the manner suggested by the prior art (Smith et al) would have resulted in a built in viscosity and cohesive strength such that any fibers of the substrate do not penetrate the continuous film. Where, as here, there is a sound basis to believe that the critical function for establishing novelty and unobviousness in the claimed subject matter may, in fact, be an inherent characteristic of the prior art composition (note that the references do not measure viscosity of the film after exiting the die nor do they measure cohesive strength of the film after exit of the die however the coatings applied are thin pinhole free coatings of the hot melt which are applied to a nonwoven, which is what appellant achieved with the specified coatings), it is incumbent upon appellant to prove that the prior art compositions do not possess the characteristics relied upon, see In re Spada, 15 USPQ2d 1655, In re Fitzgerald, 205 USPQ 594, In re Best, 195 USPQ 430, In re Glass, 176 USDPQ 529, In re Ludtke ,169 USPQ 563 and In re Swinehart ,169 USPQ 226. Appellant's argument that inherency is not a proper basis for rejection based on obviousness is not persuasive.

Regarding the remaining arguments relating to the rejection of claim 55, the appellant is advised that the double patenting rejection has been withdrawn and the arguments relating to the same are therefore deemed moot. Additionally, appellant is referred to the discussion of Smith et al above for a complete discussion as to why one skilled in the art at the time the invention was made would have been expected to utilize the techniques of Smith (the known and conventional hot melt extrusion processing) to suspend the film between the nozzle outlet and the nonwoven substrate in E.P. '013 and Maletsky et al. extrusion of a film from an extrusion device was suggested by Maletsky et al and the use of a nozzle (a slit die) was suggested by E.P. '013. one viewing the prior art as a whole would have expected that the film would have been suspended

between the applicator and the substrate as such was the common technique used to apply such film coatings as evidenced by Smith et al.

Regarding the rejection of claims 3 and 4 and the addition of either one of Waggoner or U.K. 688,637, the appellant essentially argues that these references do not cure the deficiencies of the prior art rejection of the independent claim. Because the rejection as discussed above is sound, appellant's argument that the rejection of claims 3 and 4 should be removed because of the lack of a prima facie case have not been found to be persuasive. Appellant also argues that there is nothing in Waggoner or U.K. '637 which suggested the specified gap for the specified thermoplastic composition, however one skilled in the art at the time the invention was made would have understood that the size of the spacing between the dispenser and the substrate would have directly impacted whether the film was capable of bonding to the substrate or not (as suggested by Waggoner and U.K. '637) and thus one skilled in the art at the time the invention was made would have been led to optimize the size of the spacing. Clearly, one skilled in the art would have determined through routine experimentation the desired gap size (in light of the suggestion to optimize the same in the prior art) and such would have resulted in the specified gap size of the claims (note that in the prior art a good bond between the film and the substrate was a desirable result).

Regarding the prior art rejection based upon Sanftleben and Boger, the appellant argues that neither one of Sanftleben nor Boger suggested the use of a composition that has a complex viscosity of less than 500 poise at about 1,000 radian/second at the coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at the coating temperature and more specifically argues that Sanftleben disclose that their

composition preferably have a viscosity of less than about 2.5 poise. The appellant argues that the reference to Boger did not make mention of a specific viscosity for the material employed therein and in the examples chose a material having a viscosity of 3 poise for one material and 7.5 poise for another material. these arguments have not been found to be persuasive. While the reference to Sanftleben suggested a preference for coating materials having a viscosity of 2.5 poise (column 4, lines 34-39, as identified by appellant), the reference suggested that viscosities up to 100 poise may be acceptable depending upon the application method, the desired coating thickness and the surface area to be covered, column 6, lines 41-48. note that the thicknesses desired fell within the specified ranges identified by appellant (2-5 mils in thickness). Not additionally that the reference appeared to suggest that one skilled in the art would have been able to apply the coating via a hot melt coating operation with an extruding device which formed a layer which then contacted the surface to be coated (see the examples where the hand held glue gun was used to apply the coating). Clearly, one applying the same coating thicknesses as appellant utilizing the coating techniques which included a slit nozzle (see Boger for this coating technique) would have recognized that the viscosity would have been a variable which would have been optimized in order to attain the desired coating thickness. As such it appears from a fair reading of Sanftleben that the viscosity would have been a result effective variable which depended upon the coating technique selected as well as the coating thickness desired and because one would have been motivated to provide the same coating thickness and utilize the same coating techniques as claimed, it is believed one would have determined through routine experimentation the desired viscosity of the materials useful for the processing. Because one desired to additionally attain a pinhole free layer, it is believed such optimization (through

routine experimentation) would have led to appellants claimed viscosity range. the reference to Sanftleben suggested therefore that the composition at the coating temperature would have included those thermoplastic hot melt materials having a viscosity of 100 poise (note that 100 poise for the viscosity appears to fall within both identified ranges of the claim, namely less than 500 poise at 1,000 radian/second and between 100-1,000 poise at 1 radian/second).

The reference to Sanftleben did not measure the "complex viscosity" under the specified conditions of 1 radian/second and 1,000 radian/second, however the reference did suggest as useful compounds for the non-reactive hot melt coatings compositions which included amorphous polyolefins (APO) thermoplastic. This is the same thermoplastic material selected for use by appellant in the process. Because the Office is ill equipped to obtain prior art samples of material as well as samples of the claimed invention and run tests upon the same to determine whether or not the materials in fact possess different and unobvious characteristics, the burden is upon appellant to provide evidence that the specified properties claimed of the materials employed are in fact materially different from that which existed in the public domain. It should be noted that such is a requirement of establishing non-obviousness once the burden has been shifted to appellant and here the burden to provide such a comparison has clearly been shifted in that the reference to Sanftleben suggested use of the same type of thermoplastic materials for the hot melt compositions which had processing temperatures within appellant's desired range and which provided pinhole free coatings which were of the same thickness as appellant's specified coatings. Where, as here, there is a sound basis to believe that the critical function for establishing novelty and unobviousness in the claimed subject matter may, in fact, be an inherent characteristic of the prior art composition (note that the references do not measure the complex

viscosity under the specified shear of 1 radian/ second and 1000 radian/second at the processing temperature, however the viscosities measured appear to have viscosity measures within the ranges of appellant's viscosity and the coatings applied are thin pinhole free coatings of the hot melt, which is what appellant achieved with the specified coatings), it is incumbent upon appellant to prove that the prior art compositions do not possess the characteristics relied upon, see In re Spada, 15 USPQ2d 1655, In re Fitzgerald, 205 USPQ 594, In re Best, 195 USPQ 430, In re Glass, 176 USDPQ 529, In re Ludtke ,169 USPQ 563 and In re Swinehart ,169 USPQ 226.

While it is correct that Boger did not expressly suggest what the specified viscosity of the material employed was, in the examples of the reference where the viscosity of the materials was specified, the hot melt material was sprayed upon the substrate. The appellant is advised that Sanftleben suggested that the coating technique utilized would have been a factor in determination of the viscosity of the material selected for the operation. Additionally, the reference suggested that one skilled in the art would have known to apply the hot melt composition for conformal coating via a slit die coating operation wherein the coating was applied out of a die in the form of a melted film of hot melt and brought into contact with the substrate to be coated. The appellant is advised that for this coating technique one skilled in the art would have understood that different viscosity parameters would have been useful and would have optimized the same in order to achieve a thin film which was pinhole free. the combination of references as expressed above was to utilize the composition of Sanftleben with the conventional processing which included slit die coating of the hot melt upon the substrate as an alternative to brush coating as suggested by Boger (and not to utilize the hot melt coatings of Boger as Boger does not give details as to the coating composition useful in the processing).

The appellant also argues that the combination failed to teach the particular coating technique utilized in the claimed invention, namely the non-contact coating of the substrate. The appellant focuses upon the reference to Sanftleben and states that in Sanftleben the reference desired to utilize a coating technique with more selective application and that in the examples in Sanftleben the dispensing from the handheld dispenser was not a continuous film and that the only reason the reference attempted to utilize the handheld glue applicator was to determine whether the material would have been suitable for brush or spray application. The appellant also notes that all of the remaining examples employed a spray technique for application of the coating. One thing is certain and agreed upon from Sanftleben, that the conformal coating in the operation would have suitably been applied with a brush or spray technique. It is noted appellant does not claim a brush or spray technique for the coating, however, the use of a brush technique , a spray technique, or slit die technique (appellant does employ a slit die technique where the coating was applied via a slit die in the form of a film which was brought down upon the substrate) were all art recognized equivalent techniques for application of the coating upon the substrate during conformal coating, see Boger, column 1, line 66-column 2, line 18. It is well settled that where, as here, two equivalents are interchangeable for their desired function, an express suggestion of the desirability of the substitution of one for the other is not needed to render such substitution obvious, In re Fout, 213 USPQ 532, In re Siebentritt, 152 USPQ 618. here, one is substituting the known means for coating the substrate, i.e. spraying or brushing, with a slit die method where Boger et al clearly suggested such was a known alternative means to provide a conformal coating in the art of providing such coatings to circuit boards. Additionally, note that the use of the suspended coating was suggested in Sanftleben et al with

the example of the glue gun where the adhesive material was suspended from the gun to the substrate. Note further that Sanftleben suggested that extrusion of the composition would have been a suitable coating technique used and that Boger suggested that in the slit method the moisture proof insulator was pressurized and "extruded" through a slit die.

The appellant argues that Sanftleben desired to employ a conformal coating technique which allowed for more selective application and that the reference to Boger suggested that the use of the slit die method had the disadvantage of requiring masking where the coating was not to be applied (and that the only technique not requiring a mask identified by Boger was the brush technique). The appellant therefore takes the position that one would have been led to utilize brush coating techniques and not the slit die techniques of Boger in Sanftleben. This position is not well taken because: (1) one skilled in the art would have been able to select the particular coating technique from those available knowing the drawbacks and advantages of each technique and it would have been within the public domain to utilize slit die coating, and (2) the "selective coating" in Sanftleben relates to avoidance of flow of the coating material into the gap between the board and the circuit component after application of the composition to the board and not the masking or leaving of areas uncoated.

Regarding the first response to appellant's position, processing by brush coating was not well suited for automated production (see 4,753,819 incorporated by reference in Boger at column 2, lines 18-21 at column 1, lines 65-column 2, line 2 of US Patent 4,753,819) while the use of a slit die was suited for automated production (column 2, lines 45-46). While a mask is stated to have been required, the claimed invention at hand does not exclude the use of a mask upon the substrate. clearly, one concerned with mass production of conformal coatings would

have disposed a mask upon the substrate and employed the slit die method for coating wherein one attained the specified selective coating (as desired by Sanftleben) and also attained mass production of the product. As previously noted, one skilled in the art at the time the invention was made would have known of the various alternative techniques available to him or her and would have been capable of selecting the desired technique based upon those needs. There is ample evidence of record which suggested such a selection would have included the utilization of the slit die technique of Boger. The appellant additionally is advised that the slit die method was useful for applying the coating over a wide area and that this was one of the parameters which Sanftleben was concerned about in selection of appropriate viscosity, see column 2, lines 55-58 of Boger and column 6, lines 38-48 of Sanftleben.

Regarding the second response to the argument, the portion referred to in Sanftleben by appellant refers to the flowing of the conformal coating composition into the gap between the circuit and the board, see column 2, lines 49-63, coiumn 3, lines 13-17. in Sanftleben, the composition of the coating material was selected to be a hot melt coating composition which was suitably applied utilizing conventional hot melt application techniques including extrusion because of the limited flow characteristics of the composition which prevented the composition once applied from flowing into the gap between the circuit and the board, column 4, lines 40-65. in other words, the selective coating problem was resolved by Sanftleben by selection of a coating material which did not flow into the gaps between the circuit and the board after the coating was applied. Clearly, one reading the same would have understood that the use of such a limited flow composition would have eliminated the need for masking in the operation of Boger with the slit die method (because one no longer worry about flow into the gap between the circuit

and the board as such would not likely occur with the composition of Sanftleben). Appellant's argument that one would have been led to only use brush coating is therefore not persuasive.

Appellant lastly argues regarding the prior art rejection of Sanftleben and Boger that the rejection is based upon the obvious to try standard and that this standard is inappropriate. The appellant is advised that the rejection is not based upon such an obvious to try standard. The ordinary artisan would have in fact reasonably expected that the slit die method of Boger would have been a suitable method for application of the coating composition in conformal coating. To begin with the reference to Sanftleben expressly suggested that extrusion coating would have been a suitable method for the application of the hot melt coating compositions described therein (column 4, lines 51-65. the reference to Boger in the description of the slit die method expressed that the material was extruded from the slit die, column 2, lines 14-18. In Sanftleben, the composition in the example was dispensed from a handheld applicator (like a hot melt glue gun). In Sanftleben, the flow properties of the composition would have been adjusted to be adapted to use of various coating techniques to provide for wide coatings (column 6, lines 38-48 of Sanftleben). Both Boger and Sanftleben were concerned with application of conformal coatings upon a substrate. Both suggested the use of conventional hot melt coating techniques including the use of an extruder to apply the coatings. Clearly, one would have reasonably expected that the slit die method of Boger would have been suitable as a coating technique in Sanftleben. The appellant argues that one would not have reason to believe that extruding the compound of Sanftleben using the slit die method of Boger would have produced a continuous film (because Boger does not address the necessary properties of the composition useful in the operation), however the reference to Boger in describing the slit die method expressly stated that a film was

extruded from the die and additionally both the references to Boger and Sanftleben desired to produce coatings which were pinhole free. clearly, one would have expected using the conventional hot melt dispensing techniques of a slit die extrusion one would have produced a continuous film with the composition of Sanftleben. Appellant is advised that the standard of obviousness is not one of absolute predictability but rather one of reasonable expectation of success and it would appear based upon the evidence of record that one would have reasonably expected that employing the slit die method of Boger to dispense the coating of Sanftleben in conformal coatings would have resulted in the extrusion of a film from the slit die onto the substrate to be coated.

The appellant argues that there is no suggestion that the coating composition in Sanftleben would have been suitable for slit die coating because the viscosity of the materials used in conformal coating vary so much (and are selected to some extent dependent upon the coating technique used). However, the reference to Sanftleben expressly suggested that those skilled in the art at the time the invention was made would have employed conventional, commercially available hot melt coating techniques for application of the coating, which techniques would have included extrusion coating, brush coating, and spraying. Boger expressly suggested a suitable extrusion coating technique (slit die coating) which was useful for hot melt coatings and which was used for conformal coating. One would have reasonably expected that a film of the coating would have been formed utilizing the slit die method of Boger with the composition of Sanftleben and thus would have found the claimed invention prima facie obvious.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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JHA
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